Statement for the Record
Pertaining to Testimony Given Before the
Senate Committee on Commerce, Science and Transportation
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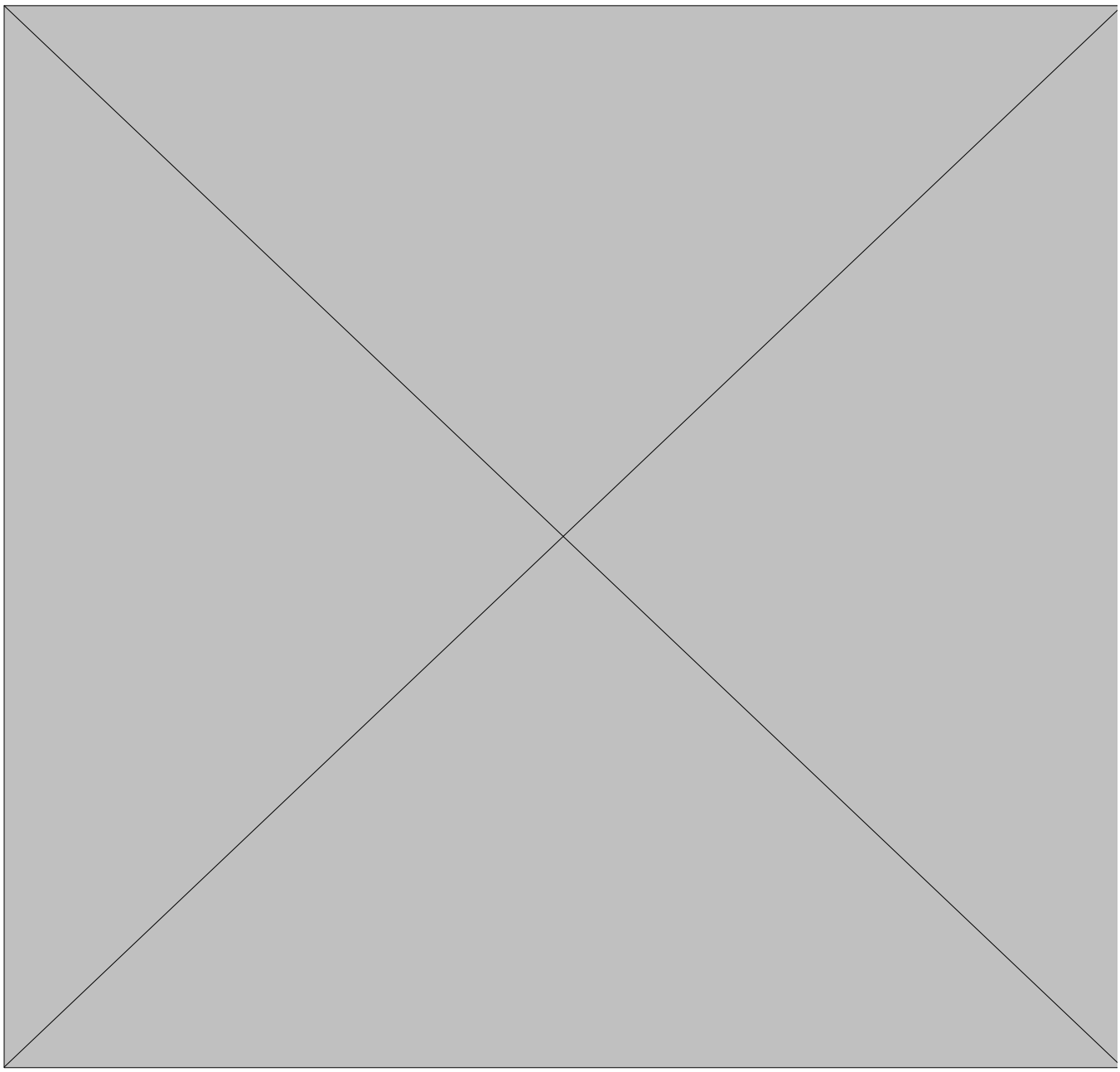
Introduction

I am pleased to appear today to address the Department of Defense role in commercial space launch. I am especially happy to have this opportunity to present a real success story in the making--the Evolved Expendable Launch Vehicle (EELV) Program. This program holds the promise of a bright future for international competitiveness of our commercial space launch industry and contributing to the national interest and economic well being of the United States.

Today I would like to provide you with the following information regarding the Department of Defense's view and support of the commercial space launch industry. First I would like to review the history of commercial space launch, specifically, how we arrived at where we are today from a launch market capture viewpoint. Secondly, I would like to provide a short discussion on where the commercial space launch market appears to be heading. This will be followed by the Department's views on the international marketplace for space launch services and some of the additional factors beyond cost that are used in the selection of launch vehicles by the satellite industry. Finally, I will provide you with an overview of the Evolved Expendable Launch Vehicle (EELV) program and the activities that led up to the creation of the EELV program and the current National Space Transportation Policy.

Summary of US Launch Market Share (historical perspective)

When discussing the future of commercial space launch, it is useful to understand the past. The chart below shows a top level breakout of the history of the commercial space launch market capture over the last twenty years. During the mid 1970's the U.S. was the only country that was providing commercial launch services, therefore we held 100% of the market. Ariane launch services were made available beginning in 1980. Twenty percent of the U.S. commercial satellite launch service market disappeared. In conjunction with the Ariane vehicle becoming operational, the U.S. was developing the Space Transportation System (STS), or Space Shuttle, that was going to be used to launch all government, DoD and NASA, and all commercial satellites. This led to a philosophy that expenditures in upgrades to the existing expendable launch systems would not be made, in order to support the STS. When the Challenger accident occurred, the U.S. expendable launch industry was not in a position to step in and pick up the resulting launch opportunities in a timely manner.



As a result, the systems in use today by the U.S. commercial launch providers have not changed fundamentally from what was used in the late 1970's – early 1980's. More recently, the non-market economy nations and Japan have entered into the growing launch services market. This initially resulted in an excess launch capacity worldwide, or in other words, there were more launch vehicles available than satellites that required the service.

Now that we know where we have been, let's take a look at where we believe this market is going in the future. The charts below are provided by the FAA on an annual basis.

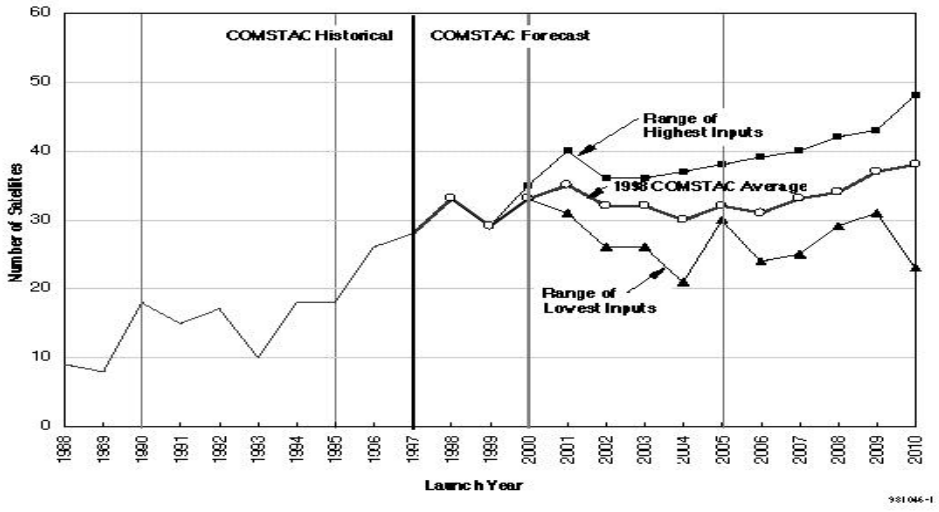


Figure 1.0. 1998 COMSTAC Commercial GTO Mission Model

The first chart above shows the historical and projected number of launches through the year 2010. The total number of launches indicated above include only those satellites requiring launch services to geostationary orbit (GEO). The FAA also has developed a similar projection for those satellites requiring launch services to low earth orbit (LEO). The second chart indicates the trends associated with satellite weight. As the chart indicates, the projection for larger satellites and increasing numbers points the direction for where the commercial launch providers need to be able to be after the turn of the century.

DoD View of Commercial Rationale for Offshore Launches

The issue of offshore launches needs to be carefully understood before views or opinion can be provided. There are a number of factors that have resulted in the increased launches of satellites by foreign launch providers. These include cost, schedule, assured access for the satellite, and market pressures on the satellite service provider.

First, let me address the issue of cost. The US Government has negotiated quotas on the total number of launch vehicles that can provide service to GEO on launch vehicles manufactured in Russia, Ukraine and China. This has resulted in a limited number of launches available to support commercial satellite launch requirements. In addition, there are pricing agreements in place between the appropriate governments that limit the price by controlling the cost compared with currently available domestic launch services. This has kept these same companies from flooding the market with low cost systems with which current U.S. launch services would not be cost competitive.

Another factor included in the selection of foreign launch systems by satellite industry is

the ability to have assured access to space. This approach, where multiple launch service providers are selected, allows the satellite industry to ensure their satellites are capable of being launched into orbit by multiple sources, providing them "guaranteed" access to space even if one launch service provider experiences a failure and is temporarily unable to provide launch services.

One of the more important factors associated with launch service provider selection by the satellite industry has to do with the international market of the services that the satellite itself provides. As world demand for space based information and communications services expands, service provider access to these foreign markets is a fundamental aspect of the business transaction. For example, in order to provide commercial television or communication services into the Asian marketplace, the governments in that region may require that the satellites providing such services be launched on a launch vehicle in that region. Similarly, the investment necessary for entry in an international partnership may be made with launch services necessary to deploy the satellite constellation. The partnership not only provides the necessary capital for expensive systems but assures government approval for the necessary operating licenses in the region.

Therefore, the launch service provider selection is not based entirely on cost or schedule, but on constraints from the end user of the satellite service. This is anticipated to continue in the future. Consequently, it is unlikely even the most successful new launch vehicle would allow U.S. launch service providers to capture 100% of the international market.

SPACE TRANSPORTATION POLICY

In 1993, Congress directed the DoD to develop, in consultation with the Director of the Office of Science and Technology Policy (OSTP), a plan that "establishes and clearly defines priorities, goals, and milestones regarding modernization of space launch capabilities for the Department of Defense or, if appropriate, for the government as a whole." Following the resulting 1994 report on DoD launch system modernization options submitted by Gen Moorman to the DoD and the Administration, the AF embarked on the EELV program. The underlying principles of the EELV program, as articulated in Option 2 of the Moorman report and the President's National Space Transportation Policy (PDD/NSTC-4), are to develop an expendable launch system evolved from current systems, or components thereof, to satisfy current medium and heavy space-lift requirements within a limited $2 billion budget.

The DoD has established a program that reduces the cost of space launch in accordance with the President's 5 Aug 94 Policy on Space Transportation. Specific actions identified in the DoD's Space Transportation Implementation Plan to the President's policy include the following:

* Our current medium and heavy expendable launch fleet (Titan, Atlas, and Delta systems) will be maintained until the EELV replaces them with a lower-cost family of vehicles evolved from current systems or their components.
* Small launch vehicles will be procured commercially, with limited government support.
* Expendable launch vehicle (ELV) technology will support product improvement for EELV.
* DoD recognizes NASA's leadership role in reusable launch vehicle development. DoD

will support technology programs common to reusable and expendable technology.
* The range and launch infrastructure supporting all launch vehicles will continue to be modernized. (EELV (Affordability through Innovation) White Paper, Aug 96).

EELV PROGRAM

On 25 Oct 94, the Deputy Secretary of Defense signed the implementation plan for the National Space Transportation Policy, identifying the EELV program as DoD's solution to reducing the cost of launch. In FY95, Congress appropriated $40M for space launch modernization. The budget supported evolving a current expendable launch vehicle or component thereof into a single expendable launch vehicle family for the nation.

On 24 Aug 95, contracts were awarded to Alliant Techsystems, Boeing Defense and Space Group, Lockheed Martin Astronautics, and McDonnell Douglas Aerospace to validate EELV concepts. On 20 Dec 96, the Secretary of the Air Force down selected from the four initial contractors and awarded follow-on pre-engineering and manufacturing development contract awards to Lockheed Martin Astronautics and McDonnell Douglas Aerospace (which has since become a wholly-owned subsidiary of The Boeing Company). On 3 Nov 97, the DoD approved a change to the original acquisition strategy. The revised approach will: (1) position the DoD to procure launch services instead of separate production and launch operations efforts, (2) maintain an ongoing competition for launch services between two contractors rather than downselecting to one, and (3) have the contractors share the cost of developing a national launch capability that meets Government requirements and is commercially marketable. The simultaneous award of Development and Initial Launch Services business arrangements is scheduled to occur in October 1998.

The EELV system includes the launch vehicles, infrastructure, support systems, interfaces, mission integration, and launch operations activities. Evolved from current expendable launch systems and new applications of existing technology, EELV will support military, intelligence, civil, and commercial mission requirements.

During the previous EELV program phases, each contractor matured an EELV system design. The Government's goal is to take advantage of market-driven contractor development so that the resulting commercial launch services also meet Government needs, (i.e., is genuinely dual-use). To continue to influence the otherwise private development of a dual-use launch system, the Government must be involved in that development. This involvement includes partially funding the development effort and leasing and licensing the launch base properties (including launch pads) to the contractors.

The Department of Defense is currently in source selection to award the EELV development agreements and Initial Launch Services (ILS) contracts. The period of performance for the Development effort is FY98-03. The Government intends to have up to two EELV launch service providers at each coast. Because of the tremendous benefit to the contractors in marketing the EELV commercially, the Government intends to limit its funding for the development to a not-to-exceed (NTE) amount of $500M per contractor. The contractors must

contribute additional funds of their own as necessary to bring their EELV operational capability on-line. The government investment in the development phase provides the following benefits:

a) Incentivizes the contractors to meet Government requirements
b) Ensures heavy lift vehicle (HLV) development
c) Facilitates the Government's 25% or greater cost savings goals
d) Allows competition within all vehicle classes
e) Upgrades launch infrastructure
f) Allows each contractor's launch service prices to be internationally competitive
g) Acknowledges EELV as a dual-use national launch system

During the Development agreement, each competitor's progress will be measured and incentivized by the use of discrete Milestone Payments that are associated with major development accomplishments. The Government and contractors will negotiate the payment milestones and accomplishment criteria, which will become part of the development agreements.

The Air Force intends to sign real property leasing, licensing, and support agreements with the Development and ILS contractors for land and facilities use and operations at Cape Canaveral AS, FL and Vandenberg AFB, CA. This arrangement complements the Air Force objective of pursuing commercial practices for its launch services requirements. Through the use of these agreements the contractors will be responsible for the maintenance and operations of their facilities, thereby allowing for an equitable allocation of these costs over the entire EELV customer base (both Government and commercial).

The Air Force will acquire commercial launch services for Department of Defense payloads. The ILS contracts encompass launch services for launches in FY02-05. The deliverables will be competitively awarded commercial launch services to deliver Government payloads to their intended orbits. The current, long standing, commercial practice is to contract for launch services on a firm fixed price basis concurrent with the development activities. The Government will have the same type of arrangement under this Federal Acquisition Regulation Part 12 contract. Award of these launch services will provide each contractor an initial stable set of Government missions to help stimulate commercial sales for the new launch service and establish contractor commitments to provide launch services. The capability to use EELV as a commercial launch service for all missions will allow the contractors to capture additional market share in the international launch vehicle market and recoup their development costs across their entire business base. Department of Transportation, Commercial Space Transportation Advisory Committee (COMSTAC), and Teal Group projections, as well as many other independent company and research group studies, indicate robust growth in international commercial payload requirements and a significantly increased demand for launch vehicles.

We believe the Evolved Expendable Launch Vehicle program will provide the U.S. with the critical infrastructure necessary to compete competitively for launch services in the international marketplace. It will establish two providers of similar launch services in the U.S., eliminating one of the reasons for off-shore launches. Finally, it will insure a more cost-effective space transportation capability for future national security space missions.

Again, I thank the committee for the opportunity to present these views on space launch.